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World Shipbuilding: Facing Up To Overcapacity

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World Shipbuilding:
Facing Up To Overcapacity

Central Intelligence Agency
National Foreign Assessment Center

November 1977

Highlights

Output in the depressed world shipbuilding industry will continue to fall until the early 1980s when production will be about one-third the peak 1975 level of 34 million grt. The decline stems from speculative overbuilding in the early 1970s and the worldwide economic recession—set off by the massive 1973/74 oil price hikes—which deflated demand for both tankers and bulk carriers.

European shipbuilders have been hit not only by the global recession but also by the aggressive Japanese shipbuilders who enjoy a 30-percent cost advantage; Japanese yards continue to win more than half the world's dwindling orders. Negotiations on market sharing between the European Community and the Japanese are stymied by an inability to coordinate third-country production.

The West European shipbuilders face a gloomy long-term outlook not only because of formidable Japanese competition but also because of growing competition from the rapidly developing shipbuilding industries in Brazil, South Korea, and Taiwan.

Various international plans to reduce the oversupply of tankers—currently about 37 percent of the world oil-carrying capacity—have foundered on the rock of national interests. With international cooperation out, at least for the present, national subsidies to the shipbuilding industry are postponing recovery of the industry beyond the mid-1980s.

World Shipbuilding: Facing Up To Overcapacity

The Boom, 1961-75

World merchant ship production reached an alltime high in 1975 amid clear signs that shipbuilding's longest and most spectacular growth period was giving way to a severe depression. Shipyards completed a record total of more than 34 million grt* of ships in 1975. By yearend, however, the backlog** of new ship orders had fallen to a five-year low of 48 million grt signaling the end of 14 years of steady growth. Between 1961 and 1975, production of merchant ships grew at an average annual rate of 11 percent. Output doubled during 1961-68 and doubled again during 1968-75 (see table 1).

The boom resulted from the vigorous expansion of the leading industrial economies and the growing demand for petroleum, which was being substituted for coal in many uses. Increased demand for imported raw materials, together with the closure of the Suez Canal in 1967 and the consequent lengthening of sea routes, led to a flood of orders for larger ships that could operate at lower costs.

Equally important in the shipbuilding boom were technological advances that permitted the construction of much larger ships. Major advances in shipbuilding technology during this period included: fully automated welding, prefabrication of large components, widespread use of computers, and availability of new high tensile strength steels.

Between 1961 and 1975, the average size of new ships tripled. The new technology was particularly adaptable to the construction of tankers and bulk carriers for the movement of petroleum, ores, grains, and other bulk cargoes. Accordingly tankers and bulk carriers, especially the very large crude carriers (VLCCs) that exceeded 200,000 deadweight tons (dwt), spearheaded the shipbuilding boom, accounting for 75 to 90 percent of new ship capacity (see table 2).

Speculative ordering also spurred the shipbuilding boom in the early 1970s. Series production of large ships in new high-technology yards reduced the unit costs of new ship capacity between 1970 and 1972, while the advent of strong inflationary pressures in 1973 stimulated a surge of speculative fixed-price orders. Between December 1972 and December 1973, the backlog of ship orders increased by nearly two-thirds, to

Table 1

World Merchant Shipbuilding Production

Year	Million Gross Register Tons	Percent Change
1961	8.1	−3.6
1962	8.2	1.2
1963	9.0	9.8
1964	9.7	7.8
1965	11.8	21.6
1966	14.1	19.5
1967	15.2	7.8
1968	16.8	10.5
1969	18.7	11.3
1970	21.0	12.3
1971	24.4	16.2
1972	26.7	9.4
1973	30.4	13.9
1974	33.5	10.2
1975	34.2	2.1
1976	33.9	−1.0
1977[1]	25	−26

[1] Estimate.

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* Gross register tons (grt) are normally used to measure ship production, whereas ship capacity is commonly measured in deadweight tons (dwt). Ratios of dwt to grt vary from 2.0 for large tankers to 1.0 for passenger ships.

** Orders in hand but on which construction had not commenced.

Table 2

World Shipbuilding: Distribution of New Ship Capacity

Percent [1]

Year	Tankers [2]		Bulk Carriers	Other	Total
	VLCCs	Other			
1963	0	49	26	25	100
1966	1	58	30	11	100
1969	33	27	20	20	100
1972	34	31	21	14	100
1974	48	27	15	10	100
1976	46	25	19	10	100

[1] Based on deadweight tons.
[2] Includes combination carriers.

more than three times the tonnage of ships actually under construction.

Return to Reality After 1975

Excess tanker capacity was already developing by 1973. Even with continued growth of oil demand at the unprecedented rate of 15 percent a year during 1970-73, completion of all the oil-carrying capacity on order at the time of the 1973/74 oil price hike by itself would have created a 23-percent surplus in the oil-carrying fleet, or 75 million dwt, by yearend 1975.

The surplus in oil-carrying capacity ballooned in 1974 when the quadrupling of oil prices checked the growth of seaborne petroleum shipments and the completion of new tankers continued apace (see table 3). In 1975, further increases in petroleum prices, the deepening of the worldwide recession and, to a lesser extent, the reopening of the Suez Canal further deflated the demand for shipping capacity. Surplus oil-carrying capacity at the end of June 1977 was about 138 million dwt, about 37 percent of the entire world oil-carrying capacity (see table 4).

Merchant ships on order shrank from a peak of 133 million grt in March 1974 to a nine-year low of 46 million grt in June 1977. Over the same period, the percentage of tankers on order fell from 75 to 32 percent of total tonnage ordered, as roughly 55 million grt of tanker orders were canceled. Because of an average time lag of about two years between the placement of an order and delivery, ship production continued to grow even as new orders declined. Production reached an alltime high of 34.2 million grt in 1975 and declined only slightly to 33.9 million grt in 1976. Production has dropped sharply in 1977, however, as orders continue to be canceled, new

Table 3

Comparative Growth of World Seaborne Trade and Shipping Capacity

	Index 1963=100		Average Annual Growth Rates (percent)	
	1973	1976	1964-73	1974-76
World seaborne trade [1]	327	358	12.6	3.1
World fleet [2]	251	337	9.6	10.3
Ship production [2]	419	489	15.4	5.3
World petroleum trade [1]	416	449	15.3	2.6
Tanker fleet [2]	345	511	13.2	14.0
Tanker production [2, 3]	613	714	19.9	5.2

[1] Data are based on estimated ton-kilometers.
[2] Data are based on deadweight tons.
[3] Includes combination carriers.

Table 4

Surplus World Oil-Carrying Capacity 30 June 1977

Oil-Carrying Fleet	Million dwt
Tankers	324
Combis [1]	47
Total capacity	371
Less:	
Tankers in dry trades	2
Combis in dry trades	21
Available capacity	348
Estimated demand for oil-carrying tonnage	210
Estimated surplus capacity	138
Laid-up or in repair	36
Slow steaming	56
Other underutilizations	46

[1] Combination bulk carriers—commonly called "combis"—are capable of carrying either oil or dry bulk cargoes. Actual division of use varies considerably with market fluctuations, but averages about 50/50.

orders fail to materialize, and builders stretch out production schedules to postpone the shutdown of their yards.

Projection of Aggregate Demand

Even though production of ships is being cut way back, it remains much greater than the demand for new ships. The Association of West European Shipbuilders estimated in mid-1977 that shipbuilding demand will amount to only about 6 million grt in the late 1970s but will rise steadily to about 18 million grt in the early 1980s. These figures are roughly consistent with projections of Japan's Shipping and Shipbuilding Rationalization Council, which places world demand for new merchant ships at about 12 million grt in 1980. In any case, demand will be insufficient to bring about recovery of the world shipbuilding market before the early 1980s. Both sets of projections conclude that:

- Orders for new crude oil tankers will be practically nil through the early 1980s.
- Demand for new bulk carriers will be extremely low in the late 1970s but should rise sharply to about one-third of new orders in the early 1980s.
- Over the next decade, demand for general cargo ships will remain steady at 4 million to 6 million grt.

Tankers—A Key to Recovery

A genuine recovery of world shipbuilding is dependent upon the resurgence of demand for tankers, which accounted for two-thirds of gross tonnage produced in the industry's peak years, 1975 and 1976. Tanker orders will pick up only when the supply of existing tankers approaches the demand for tanker capacity, a development at least seven years away.

The Organization for Economic Cooperation and Development (OECD), employing a reasonable set of supply assumptions, estimates that such a supply/demand equilibrium could occur by 1984, if world gross domestic product (GDP) grows at the highest foreseeable rate, and oil policies of major oil consuming nations remain essentially unchanged. If, as seems probable, GDP grows less rapidly and if nations further trim growth rates of petroleum consumption through added conservation measures, equilibrium would be postponed beyond 1985. Moreover, current real demand for oil-carrying capacity is about 210 million dwt, about 18 percent less than that assumed by the OECD. This lower figure accounts for the many current operating inefficiencies (some deliberately tolerated) which constitute a hidden unused capacity.

The elimination of the tanker surplus before 1985 is extremely unlikely without new international measures such as the promotion of early scrapping. Whether tanker owners can be persuaded, induced, or compelled to scrap tankers after 15 years of service may well determine when equilibrium is restored. Normal tanker service life is now 20 years. Despite the sharp rise in maintenance costs after 12 years, owners keep many tankers in service longer than 20 years. Between 1980 and 1985, approximately 65 million dwt of tankers will reach their 15th year. If kept in service, the capacity of the 1985 oil-carrying fleet—including half of all combis—20 years old or younger would total 325 million dwt, well above the OECD's maximum equilibrium demand forecast of 300 million dwt. Only a draconian international agreement to scrap tankers is likely to bring the oil-carrying fleet below 325 million dwt.

Significant reductions in oil-carrying capacity of the world fleet from the retrofitting of segregated ballast tanks (SBTs) are also unlikely. Although environmentalists view SBTs as a safeguard against oil spills, industry experts strongly argue that there are cheaper and more effective ways of reducing pollution by tankers. In any event, few tanker owners can justify the cost of installing SBTs—averaging about $2 million for a large tanker—under current market conditions.

Brighter Prospects for Bulk Carriers

The operational economy of large bulk carriers has been a major factor in the rapid growth—nearly 25 percent annually over the past decade—in seaborne bulk cargo movements. Demand for bulk carriers was so strong and sustained during the shipbuilding boom that they have accounted for about one-fourth of all new tonnage built in the last 10 years.

Although bulk cargo shipments declined with the onset of the worldwide recession in 1974, orders for bulk carriers nearly doubled in 1975 and remained strong in 1976 as owners converted orders from unneeded tankers to bulk carriers rather than pay cancellation fees. The recession, speculative ordering, and conversions of tanker orders created a surplus of bulk carriers—currently about 10 million dwt—that will increase over the next year or two as orders are completed.

Equilibrium in the bulk carrier market should be restored sooner than in the tanker market. The economic recovery of OECD nations, especially Japan, which generates nearly half of world demand for seaborne transport of raw materials, could stimulate a resurgence of orders for bulk carriers before the end of the decade.

Outlook for Other Types of Ships

Ships other than tankers and bulk carriers—largely general cargo ships, fishing vessels and gas/chemical carriers—constituted less than one-fifth of the total tonnage produced in the past 10 years. Their value per ton averages about twice that of tankers and bulk carriers putting them ahead of bulk carriers in the value of shipyard output. They also comprise three-fifths of the world fleet on a unit basis and are the mainstay of small- and medium-size shipyards.

Because of the number of ships in the "other" category and the great variety of trades served by them, demand cycles normally are dampened and tonnages produced have been closely linked to the growth of world trade. With surpluses depressing demand for tankers and bulk carriers, other ship types will account for the major share of new ship orders for the next several years.

International Reactions to the Shrinking Market

The current shipyard depression threatens to be of unique severity, scope, and duration. Although wide fluctuations in demand are common in the shipbuilding industry, its growth has rarely been keyed so extensively to one type of ship—tankers. Most of the shipyard capacity added over the past decade was specifically designed for the mass production of very large tankers and bulk carriers, for which demand will be very low for the next five to eight years.

The shipbuilding market and its financial structure have become progressively more international, increasing the difficulty of counteracting a slump through domestic measures alone. Nearly 75 percent of 1975 output was tagged for export, compared with 52 percent in 1971. Moreover, as speculation spurred expansion, traditional sources of shipbuilding funds became overtaxed, leading to a complex web of loans to shipowners and builders through international bank syndicates.

International efforts to organize effective countermeasures—that is, programs to reduce the surplus and adjust capacity to the shrinking shipbuilding market—have had only limited success. The International Maritime Industry Forum (IMIF),* representing leading shipowners, shipbuilders, oil companies, and their bankers, has taken the initiative in designing, evaluating, and publicizing measures for restoring market equilibrium.

As the focal point for matters pertaining to the tanker surplus, IMIF has alerted the industry and governments to the consequences of the oversupply. It has also suggested several measures to reduce capacity and spread the impact of the recession. A major obstacle to the principal IMIF proposals is the US Antitrust Act. Cartel arrangements—potentially the most effective means of adjusting tanker supply and raising charter rates—cannot succeed without the cooperation of American tanker owners and oil companies and the relaxation of US antitrust laws.

Within the shipbuilding industry, the Shipbuilders Association of Japan (SAJ) and the Association of West European Shipbuilders (AWES)* together represent nearly 90 percent of world merchant ship production. While both SAJ and AWES builders have been severely affected by the collapse of the tanker and bulk carrier markets, the Japanese have succeeded in winning about three-fourths of the dwindling volume of ship orders placed from Western Europe in the last 18 months. AWES leaders have responded by desperately trying to work out an agreement that would protect European builders. Their efforts foundered on SAJ intransigence, however, and negotiations were shifted in September 1976 to the political arena amid bitter threats of discriminatory trade measures.

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* IMIF was created in December 1975 by the International Association of Independent Tanker Owners (INTERTANKO). It is chaired by Sir James Dunnet, a former under secretary in the UK Ministry of Defense, and is based in London.

OECD: The Current Battleground

The OECD has become the principal political forum for the battle between the European and Japanese shipbuilders. At the heart of the problem is Japan's cost advantage—averaging about 30 percent according to US industry sources—which enables Japanese builders to increase their share of the shrinking world market at the expense of West European builders. A factor complicating the negotiations is the necessity for both Japan and Western Europe to contend with inroads by third-country shipbuilders. Some newcomers to the industry, such as South Korea and Taiwan, are very competitive because of their modern yards and low labor costs. Other countries, notably the United States, Brazil, and the Communist countries, produce mainly for protected domestic markets.

In an effort to resolve the differences between Japanese and West European shipbuilders, the EC has proposed that orders from AWES nations be shared equally by Japan and AWES shipbuilders through 1978. Tokyo has rejected this proposal. Instead, the Japanese have given repeated assurances that they will not exceed the 50-percent share of world merchant ship production achieved in 1975. West European shipbuilders find no solace in this pledge. They point out that if Japan maintains its share of the market as currently defined, Europe's share must shrink as production in third countries increases. The dispute over how to measure output is described in the appendix. The controversy is hardly academic, since the proposed alternative market-sharing arrangements for 1980 would lead to markedly different results. Assuming that output will be 12 million grt in 1980, the EC plan would call for an equal share for Japan, AWES, and other countries, whereas the Japanese plan would give Japan one-half, AWES one-sixth, and other countries one-third (see the appendix).

Although Japan has not agreed to the EC market-sharing formula, Tokyo has accommodated pressure from the EC by prohibiting below-cost contracts on new ships, adding an 8-percent-per-year inflation factor to long-term contracts, raising prices by an additional 5-percent equalization factor, and limiting orders from countries with particularly depressed shipbuilding industries. In March 1977, a one-year restriction was placed on orders from West Germany. Additional price increases and order restrictions are to be considered if the desired effects are not achieved.

What's at Stake

Employment is a primary concern of all governments in trying to protect their national shipbuilding industries. Employment in the shipyards already has dropped well below the 1974-75 peak, and government leaders want to postpone further layoffs as long as possible. In both Japan and the AWES countries, shipbuilding at peak levels employed on the average directly and indirectly less than 1 percent of the labor force; the shares range from a low of 0.2 percent in France to a high of 3.0 percent in Norway. These numbers nonetheless are troublesome to West European governments because the displaced workers cannot find other jobs in this period of persistent unemployment. Prospects for a substantial reduction in unemployment are bleak at least for the next 18 months.

The EC governments also are worried about the national security implications of being crowded out of the shipbuilding market. A viable shipbuilding industry is considered essential to their national interests. They are determined to maintain sufficient capacity to cover basic requirements.

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* AWES members include the EC countries, except Ireland and Luxembourg, plus Finland, Norway, Spain, and Sweden.

Outlook

Japan's concessions have quieted—temporarily at least—EC threats of import quotas on Japanese ships. Most EC countries feel compelled, however, to give additional protection to domestic industries. The Netherlands and UK already have increased subsidies and credits to aid their shipbuilders through the period of contraction. Because of differing views on appropriate measures, EC states are yielding to domestic pressures to proceed unilaterally rather than await a common EC program. The subsidized production of ships not needed in the current market will further increase the already serious ship surplus, drive more shipowners into bankruptcy,* and delay recovery of the shipbuilding industry.

Governments will be carefully considering how much of their shipbuilding industry to preserve through subsidies. The short-term impact of closures of uneconomic yards must be weighed against more costly outlays over extended periods to ensure their survival. A recent IMIF study estimates it would cost governments about $50 billion to maintain world shipbuilding capacity at 20 million grt—about half of 1 January 1977 capacity—through 1985; only a fraction of this cost would be recovered.

Even assuming West European shipbuilders survive the present time of troubles, they face the long-term task of meeting not only the formidable competition of Japan but also competition from the rapidly developing shipbuilding industries in Brazil, South Korea, and Taiwan. For this reason, European shipbuilders will continue to press hard for satisfactory market-sharing agreements and to call on their governments for subsidies and protected markets.

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* The IMIF estimates that half of the more than $20 billion debt outstanding on recently built ships is backed by governments of shipbuilding nations. Shipbuilding support measures that further depress shipping markets by increasing the ship surplus thus could prove doubly costly insofar as loan defaults are increased.

APPENDIX

Alternative Ways of Measuring Output and Determining Market Shares

The EC market-sharing proposal is based on shipbuilding data in compensated gross registered tons (cgrt), a measure of the labor input needed to produce a ship. Sophisticated ships such as passenger liners, require more labor per grt than very large crude oil carriers (VLCCs)—in this case the ratio is 10 to 1. At EC insistence, the OECD has begun compiling data on ship orders and production in both the traditional grt and in cgrt. The Japanese concede that measurement in cgrt is a reasonable basis for making comparisons between nations with varying output mixes but have shown no willingness to quote market shares in cgrt terms.

Measured in cgrt, the AWES nations and Japan each had 39 percent of the world market in 1975 (see the table). Japan had a 50-percent share measured in grt because its product mix concentrated heavily on huge, simply constructed tankers and bulk carriers—92 percent of output in 1975. The AWES countries contend that market shares measured in cgrt should remain equal. To achieve this equality, both parties would have to make proportional cutbacks in output as the market shrinks between now and 1980.

The EC adamantly opposes Japan's claim to 50 percent of the world market through 1980 on a grt basis because this implies an increase in the Japanese share in cgrt terms at the expense of Western Europe. With tanker production rapidly fading because of oversupply, Japan's product mix is becoming increasingly similar to the mix of the AWES countries. By 1980, the differences between grt and cgrt measures of production will become negligible. Thus by attempting to maintain a 50-percent market share in grt terms, Japan's share in cgrt would rise from 39 percent in 1975 to 50 percent in 1980. At the same time, other countries are expected to increase their collective share of the world market, further reducing the AWES share.

World Share of Ship Production

	1975				1980 European Community Plan		1980 Japanese Plan	
	Million grt	Percent	Million cgrt[1]	Percent	Million grt or cgrt	Percent	Million grt or cgrt	Percent
World	34.2	100	19.5	100	12	100	12	100
Japan	17.0	50	7.7	39	4	33	6	50
AWES[2]	13.0	38	7.6	39	4	33	2	17
Other	4.2	12	4.2	22	4	34	4	33

[1] Compensated gross register tons—a measure of labor input needed to produce a ship.

[2] The Association of West European Shipbuilders.